

**FACT SHEET FOR NPDES PERMIT NO. WA0040827**  
**PUGET SOUND ENERGY, JACKSON PRAIRIE GAS STORAGE**  
**PROJECT**

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## INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) of permits, which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 Revised Code of Washington (RCW) which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

Underground injection wells are regulated by Federal law under Part C of the Safe Drinking Water Act (SDWA). Administrative and permitting regulations for Underground Injection Control are codified in 40 CFR parts 124, 144, 146, and 147. The Department of Ecology is authorized to participate in and administer the federal SDWA by RCW 43.21A.445.

The regulations adopted by the State include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least 30 days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see [Appendix A--Public Involvement](#) of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix C--Response to Comments.

GENERAL INFORMATION	
Applicant:	Puget Sound Energy
Facility Name and Address:	Jackson Prairie Gas Storage Project 239 Zandecki Road, Chehalis, WA 98532
Type of Facility:	Natural Gas Storage
SIC Code:	4924
Discharge Location:	Surface Waterbody Name: Cowlitz River Latitude: 46° 27' 50" N                      Longitude: 122° 45' 50" W Underground Injection Well Latitude: 46° 32' 10" N                      Longitude: 122° 51' 00" W
Legal Description of Application Area:	1240 feet from the East line, 1414 feet from the South line, Section 7, Township 12 North Range 1 West WPM
Water Body ID Number:	WA-26-1040

## **BACKGROUND INFORMATION**

### *DESCRIPTION OF THE FACILITY*

#### HISTORY

The Jackson Prairie Gas Storage Project (JPGSP) stores natural gas underground to be used as a seasonal peaking supply or for emergency use if gas supplies to the region are interrupted. The development of the JPGSP began in 1963 and the project was certified in 1970 by the Federal Power Commission. The project was developed through the joint efforts of Washington Natural Gas (now Puget Sound Energy), Washington Water Power, and Northwest Pipeline Corporation (initial participation was through its predecessor, El Paso Natural Gas Company). Customers for gas from the JPGSP include Puget Sound Energy, Washington Water Power, Northwest Natural Gas, CP National, BC Gas Inc., Cascade Natural Gas, and others. The facility currently has a storage capacity of approximately 38,000 million cubic feet (Mmcf) and a maximum daily delivery capacity to the pipeline of 550 Mmcf. The first NPDES application for discharge of wastewater from this facility was received in 1964. The first NPDES permit for this facility was issued in 1969.

#### NATURAL GAS STORAGE

Natural gas is stored in three sand/sandstone zones located in bedrock beneath the project area; Zones 1, 2, and 9. Zone 1, the uppermost zone, is about 100 feet thick and approximately 1,100 feet below the ground surface. Zone 2 is about 200 feet thick and approximately 2,100 feet below the ground surface. Zone 9 is about 400-500 feet thick and approximately 2,800 feet below the surface.

The major portion of the gas inventory is currently stored in Zone 2 [approximately 32,000 million cubic feet (Mmcf)]. Relatively smaller volumes of gas are stored in Zone 1 (approximately 1200 Mmcf) and in Zone 9 (approximately 5000 Mmcf). Because there is some communication between Zones 1 and 2, gas from Zone 1 is recycled periodically back into Zone 2.

A major geological feature of the gas storage project area is a northwest-southeast trending fault, termed the "bounding" fault. All gas storage at the site is on the northeast side of the bounding fault. The bounding fault, coupled with an anticlinal structure on the northeast side of the fault, provides both a structural trap and closure for the subsurface storage of natural gas. Detailed geologic and hydrogeologic information for the site is contained in the attachments to the application for the original permit (EPA Form 5720-6 and attachments).

#### WASTEWATER GENERATION PROCESSES

There are three processes at this facility that generate wastewater:

Gas Storage Wastewater -- To make room for the storage of natural gas, saline water is withdrawn via a series of wells from Zones 2 and 9. This is the greatest source of wastewater at the facility and is limited in the current NPDES permit to a maximum daily discharge of 2.2 million gallons. Currently, extracted water is pumped to a 1.5 acre collection pond and periodically discharged to the Cowlitz River.

Wastewater Associated With Gas Withdrawal -- As gas is withdrawn from storage at individual wells, various amounts of associated formation water also may be withdrawn. Currently, this water is separated from the gas by gravity at the well site, piped to the collection pond via the water gathering system, and periodically discharged to the Cowlitz River. The amount of water produced in this fashion has declined steadily over the last 20 years, as the reservoir has been dried from the many gas injection and withdrawal cycles. Although not metered, the total volume produced from Zone 2 in this fashion is estimated at approximately 350 gallons per day.

Water Vapor Associated With Gas Withdrawal -- The third source of wastewater comes from the dehydration of the gas withdrawn from storage. The gas injected into the reservoir from the supply pipeline is extremely dry (less than 7 lbs. of water vapor per Mmscf). When injected into the reservoir, it comes into contact with formation water which it absorbs to the point of saturation (approximately 28 lbs. water vapor per Mmscf). Upon withdrawal from the gas storage reservoir, the gas must again be dried to the lower specification before it can reenter the pipeline. The gas is dehydrated using the solvent triethylene glycol (TEG) as the desiccant. After dehydration, the rich (water-laden) TEG is heated, selectively driving the water off as steam. The remaining TEG is recycled. The steam is collected from the dehydrator's still column and passed to a burner or flare to remove methane and other combustibles. Some of the steam condenses prior to reaching the burner and is not revaporized by the flame. This water is collected in a yard tank, passed through carbon filters, and pumped to the collection pond where it is discharged with other produced waters. Currently, wastewater volumes from this source are approximately 23 to 35 gallons per day.

#### PLANNED FACILITY EXPANSION

Puget Sound Energy is planning to increase its gas storage capacity in Zone 9. Development experience with the current gas storage reservoir indicates that the removal of water from Zone 9 will be required to provide adequate gas storage space. The company estimates that water pumping rates to accommodate this increase will be up to 499,000 gallons per day.

As part of the planned expansion, Puget Sound Energy has applied to the Department for permission to dispose of wastewater generated from gas storage Zones 1, 2 and 9 back into Zones 2-9 on the opposite (southwest) side of the bounding fault. As proposed, wastewater removed from the gas storage area will be either pumped directly to an injection well (designated as SU-909) within a closed piping system or will be pumped to the 1.5 acre collection pond and then pumped to well SU-909 for underground injection. Also as planned, the two smaller sources of wastewater, i.e. the associated water during gas withdrawal and the gas dehydration water, will be disposed via underground injection.

As proposed, injection well SU-909 meets the definition of a Class II injection well in Chapter 173-218 WAC i.e., "a well used to inject fluids: brought to the surface in connection with conventional oil or natural gas exploration or production..." if "production" is interpreted broadly. A closer definitional match is found in more recent Federal regulation [40 CFR 144.6 (b)], which is incorporated by reference in Chapter 173-218 WAC. It defines a Class II well as: "Wells which inject fluids: which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production....".

Puget Sound Energy and the Department anticipate that underground injection will provide the most effective means of wastewater disposal for the facility. Underground injection is well established technology in certain other states however, because underground injection is new to this facility and its efficacy is unknown, Puget Sound Energy will maintain permits for both underground and surface water disposal options.

#### PERMIT STATUS

This facility holds a current NPDES permit for the discharge of wastewater to the Cowlitz River (Permit No. WA0040827). This NPDES permit was written for a term of five years and expires on July 27, 2000.

An application for an additional Underground Injection Control permit for the underground injection of wastewater was submitted to the Department on January 25, 1995. The application was accepted by the Department on May 14, 1997, and public notice of the application was made on May 20, 1997. A permit was issued on September 10, 1997.

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The expiration date for this Underground Injection Control permit is July 27, 2000, identical to that of the facility's NPDES permit.

*SURFACE DISCHARGE OUTFALL*

The surface discharge outfall consists of a drainfield in a gravel bar beside the Cowlitz River. The gravel bar serves to diffuse the wastewater as it enters the river. Dilution in the river is immediate so that the brine is diluted to harmlessness.

*PERMIT STATUS*

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A permit renewal certification was received on January 6, 1999, and accepted by the Department.

*SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT*

A compliance inspection without sampling was conducted on September 26, 1998.

During the history of the previous permit, the Permittee has remained in compliance based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department.

*WASTEWATER CHARACTERIZATION*

Since no discharge has taken place during the term of the current permit, no change in the characteristics of the wastewater has taken place for discharge to surface waters.

For discharge to the injection well the following characterization is taken from the existing underground injection permit.

A description of the water quality characteristics within the various subsurface zones is summarized below (Table 1). Salinity increases with the distance from the ground surface and the water in Zones 2-9 is generally comparable to the salinity of seawater. Total dissolved solids (TDS) concentrations in Zones 1-9 are between approximately 18,000 mg/l and 34,000 mg./l. These concentrations are well above the maximum 10,000 mg/l TDS standard which defines an underground source of drinking water (USDW). Most potable ground-water supplies in the project area are from wells completed in the Quaternary deposits (water-table aquifer) that mantle the region. A few wells (maximum depth approx. 270 feet) are completed in the upper-most portions of the bedrock units that immediately underlie the Quaternary deposits. The depth to the base of the fresh-water aquifer (i.e. less than 10,000 mg/l total dissolved solids) is estimated to be approximately 600 feet from the ground surface at the site of the proposed injection well SU-909.

**Table 1: Wastewater Characterization (mg/l)**

Well #	SU-27	SU-63	SU-15	SU-15	SU-36	SU-901	Seawater
Zone	1	1	2	2	2	9	-
Depth Below Sea Level (ft.)	884-886	913-926	1752-1762	1752-1762	1775-1885	2298-2328	-
Sample Date	9/22/75	9/22/75	1/10/68	9/22/75	1/7/85	7/13/73	
<b>Parameter</b>							
pH (standard units)	6.1	6.1	7.4	6.2	6.4	6.7	-
Turbidity (nephelometer units)	28	96	14	8.5	11	40	-
Total Iron	NA	NA	2	NA	NA	5	-
Suspended Solids	37	54	30	21	370	20	-
Dissolved Solids	NA	NA	24004	NA	34000	33310	34477
Total Solids	NA	NA	27034	NA	34000	33330	-
Barium	1.1	0.3	NA	13.1	NA	NA	0.03
Cadmium	NA	NA	NA	NA	0.027	NA	0.0001
Chromium	NA	NA	NA	NA	0.029	NA	NA
Calcium	2540	4360	3340	2780	3200	1880	400
Copper	NA	NA	NA	NA	0.038	NA	0.003
Magnesium	56.5	92	189	105.5	210	510	1350
Sodium	2808	3568	6608	3569	6400	10200	10500
Potassium	70	225.5	68	74	20	67	380
Iron	2.41	2.58	0.8	1.16	1	0.25	0.01
Aluminum	<0.4	49	ND	48	0.14	ND	0.01
Chloride	12250	14500	16695	16250	19000	20546	19000
Sulfate	8.2	0.5	ND	0.6	2	0.4	2649
Nitrate	8.9	0.6	ND	1.6	0.08	ND	NA
Arsenic	<0.1	<0.1	ND	<0.1	<0.005	0.01	0.003
Fluoride	0.38	0.66	ND	0.54	0.2	ND	1.3
Lead	0.136	0.044	ND	<0.001	0.2	ND	<0.001
Zinc	0.073	ND	0.2	<0.001	0.03	0.02	0.01
Manganese	0.09	1.4	ND	9.5	0.18	0.33	0.002
Silica	5.2	80	12	7.6	NA	18	3
Color (units)	<1	14	3	2	<5	16	NA
Total Alkalinity	28	223	20	26	14	78	NA
Total Hardness	6760	11250	9117	7880	11000	6900	NA

Note: "NA" means not available and "ND" means not detected.

## **PROPOSED PERMIT LIMITATIONS**

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The effluent constituents in the application were evaluated on a technology and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department.

### *TECHNOLOGY-BASED EFFLUENT LIMITATIONS*

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment (AKART) of discharges to waters of the state (WAC 173-218-100).

There are no federal or state effluent guidelines established for this category of discharger. There is no significant alteration in the quality of the natural waters withdrawn while operating the gas storage facility prior to its injection into the same underground strata from which it was removed. This discharge meets the AKART standard and no technology-based limitations are required.

### *SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL). Original studies conducted prior to the issuance of the first permit established 2,200,000 gallons per day as the flow limit that would assure no pollution in the Cowlitz River.

### *GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters, including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards.

Because its natural salinity is comparable to full-strength seawater, several parameters associated with the injectable wastewater exceed water quality criteria. These parameters include total dissolved solids, chloride, iron, lead, manganese, and possibly barium, cadmium, and pH. However, when natural ground



water quality exceeds the criteria, the Ground Water Quality Standards [WAC 173-200-050 (3)(b)(i)] allow enforcement limits to exceed the criteria at a level equal to the natural level.

The Ground Water Quality Standards also allow enforcement limits for secondary contaminants of naturally nonpotable water to exceed criteria if certain conditions are met. The environment and human health must be protected, existing and future beneficial uses must not be harmed, and the application of AKART to the discharge must not result in concentrations less than the secondary contaminant criteria (WAC 173-200-050 (3)(b)(iv)). Secondary contaminants include copper, iron, manganese, zinc, chloride, sulfate, total dissolved solids, foaming agents, pH, corrosivity, color and odor.

Also, the antidegradation policy of the Ground Water Quality Standards (WAC 173-200-030) is met under the terms and conditions of the permit. The quality of the injected water is nearly identical to that of the water in the formation into which it is being injected.

Water quality-based limitations from the permit and their basis in regulation are described below:

Maximum Injection Flow Rate- 499,000 gallons per day -- The injection flow rate is limited to the maximum flow rate requested in a letter amending the application. A limitation on the flow rate is necessary to prevent fractures to the confining zone and the movement of wastewater or formation water into an underground source of drinking water. (WAC 173-218-100 and 40 CFR 146.23)

Maximum Permitted Wellhead Injection Pressure - 800 psi -- The maximum permitted wellhead injection pressure was based on the formation fracture gradient, expected flow rates, depth to the top of the injection zone, and other relevant parameters. As determined by the Department, injection at or below this pressure will prevent fractures to the confining zone and the movement of wastewater or natural formation water into an underground source of drinking water. (WAC 173-218-100 and 40 CFR 146.23)

Prohibitions -- Special Condition S1. also contains specific prohibitions related to underground injection. Prohibitions include injection-caused fractures to the underground confining zones, injection-caused migration of injected water or formation water into any underground source of drinking water, and injection between the outermost well casing and the well bore. The legal basis for these prohibitions may be found in WAC 173-218-030 and 173-218-100, and 40 CFR 146.23.

## **COMPLIANCE SCHEDULE**

Wastewater from the unlined 1.5 acre pond used to collect wastewater at the facility has a reasonable potential to cause a violation of the state's ground water standards. The antidegradation policy in the ground water standards states that "existing and future beneficial uses shall be maintained and protected and degradation of ground water quality that would interfere with or become injurious to beneficial uses shall not be allowed". An infiltration rate to the ground from the pond was estimated at 8743 gallons per day. This pond liner was complete on.

Schedules of compliance are allowed under WAC 173-218-100 and by reference, 40 CFR 144.43.

## **MONITORING REQUIREMENTS**

Monitoring requirements are specified in Special Condition S2. of the permit. These requirements verify that the wastewater injection process is functioning properly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-218-100, and 40 CFR 144.51).

Specific requirements include monitoring the underground injection process, the underground formation into which the wastewater is being injected, the freshwater aquifer downgradient from the injection well, the freshwater aquifer upgradient and downgradient from the collection pond, and the injected water.

A special study is also required in the permit to provide baseline information related to the underground formation pressure in the area of the injection well. Information gained from this study will be compared with ongoing formation monitoring for the purpose of assuring the Department that the underground injection of wastewater is not causing fractures to the confining Zones 2-9. Should monitoring information indicate such fracturing is occurring this would constitute a violation of the permit.

#### NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

#### NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

#### NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

#### ANTIDegradATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

#### CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

#### DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Cowlitz River that is designated as a Class A receiving water in the vicinity of the outfall. Characteristic uses include the following: water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

#### SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTU above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

#### HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge is unlikely to contain chemicals regulated for human health.

#### COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING NPDES PERMIT ISSUED JUNE 27, 1995.

Existing Limits	Proposed Limits
Flow, 2,200,000 gallons per day	No Change

#### COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING UNDERGROUND INJECTION WELL PERMIT ISSUED SEPTEMBER 10, 1997.

Existing Limits	Proposed Limits
Flow, Maximum Instantaneous, 499,000 gpd	No Change
Wellhead SU-909 wellhead pressure, 800 psi	No Change

## **MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

### *LAB ACCREDITATION*

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*

## **OTHER PERMIT CONDITIONS**

### *REPORTING AND RECORDKEEPING*

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

### *FRESHWATER AQUIFER MONITORING WELL DOWNGRADIENT FROM INJECTION WELL SU-909*

Permit Condition S5. requires the Permittee to conduct a hydrogeologic site assessment and install a monitoring well downgradient from injection well SU-909 for the purpose of monitoring the near-surface freshwater aquifer.

### *CLASS II WELL CONSTRUCTION AND OPERATION REQUIREMENTS*

Specific construction and operation requirements for injection well SU-909 are included in special condition S4. These include construction requirements, mechanical integrity testing, well failure procedures, and plugging and abandonment procedures. These requirements are given in federal regulation in 40 CFR 146.21 (construction requirements), 146.8 (mechanical integrity), and 146.10 (plugging and abandonment) and state regulation (WAC 173-218-100).

### *SPILL PLAN*

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

### *GENERAL CONDITIONS*

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control its production in order to maintain compliance with its permit. Condition G10 prohibits the reintroduction of removed substances back into the effluent. Condition G11 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G12 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G13 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G14 requires the payment of permit fees. Condition G15 describes the penalties for violating permit conditions.

### **PERMIT ISSUANCE PROCEDURES**

#### *PERMIT MODIFICATIONS*

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

#### *RECOMMENDATION FOR PERMIT ISSUANCE*

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this proposed permit be issued for   ?   years.

## **REFERENCES FOR TEXT AND APPENDICES**

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.
1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.
1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.
1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.
1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

## APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue (or issue) a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on September 4, 1999, and September 12, 1999, in *Centralia-Chehalis Daily Chronicle*, to inform the public that an application had been submitted and to invite comment on the reissuance (or issuance) of this permit.

The Department will publish a Public Notice of Draft on March 10, 2000, in *Centralia-Chehalis Daily Chronicle*, to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone or by writing to the address listed above.

This permit and fact sheet were written by Gary Anderson.

## APPENDIX B--GLOSSARY

**Acute Toxicity**--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

**AKART**-- An acronym for "all known, available, and reasonable methods of treatment".

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation** --The average of the measured values obtained over a calendar month's time.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of a treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Chronic Toxicity**--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

**Clean Water Act (CWA)**--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.



**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Critical Condition**--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

**Dilution Factor**--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

**Engineering Report**--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Major Facility**--A facility discharging to surface water with an EPA rating score of  $> 80$  points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**Minor Facility**--A facility discharging to surface water with an EPA rating score of  $< 80$  points based on such factors as flow volume, toxic pollutant potential, and public health impact.

**Mixing Zone**--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

**National Pollutant Discharge Elimination System (NPDES)**--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Responsible Corporate Officer**-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Upset**--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

**APPENDIX C--RESPONSE TO COMMENTS**

No comments received.